CLAIMS

1. A self-contained data communication system of the type providing simultaneous broadband connectivity to multiple access locations at DSL rates, the system configured for installation in a user premises having multiple subscriber access location ports, the system comprising:

a multiplicity of subscriber data signal lines, each subscriber line coupled between the system and a subscriber port of a user premises;

a plurality of line cards, disposed within a housing, each line card further including;

a DSL modem bank;

detector circuitry coupled between the modem bank and the multiplicity of subscriber signal lines, the detector circuitry polling the signal lines to thereby detect a request for data service; and

a control processor, the processor assigning a particular one of the DSL modems comprising the modem bank to a subscriber upon detection of a request for data service on a particular subscriber signal line; and

a WAN/trunk card, disposed within the housing and coupled to the plurality of line cards by a signal bus, the WAN/trunk card connected between each modem bank and a wide area network so as to effect bi-directional broadband communication therebetween.

2. The system according to claim 1, wherein each line card includes sixteen DSL modems, each line card further configured to couple to 128 subscriber signal lines through high density connectors, each line card controlling access to particular ones of the modems by all 128 subscriber signal lines.

3. The system according to claim 2, wherein each housing is configured to include four line cards, the system configured to provide simultaneous access by sixty four DSL modems to a wide area network, each housing defined system providing broadband connectivity to 512 subscriber signal lines.

4. The system according to claim 1, further comprising:

in-band authentication means for communicating with a remote record storage facility;

a memory storage area configured to receive and maintain subscriber record information provided by the remote record storage facility; and

wherein access to a broadband connection to the wide area network is granted in accordance with subscriber record information maintained in the memory storage area.

5. The system according to claim 4, wherein the remote record storage facility comprises a plurality of authentication servers, each authentication server disposed within and servicing a particular geographic area, each authentication server receiving individual subscriber profile information from DSL service providers within the geographic region and storing said individual subscriber profile information in a respective database.

6. The system according to claim 5, each subscriber receiving a unique subscriber identification indicia, the subscriber identification indicia including an address identifier portion indicating a subscriber's home authentication server.

7. The system according to claim 6, the system interrogating a subscriber's home authentication server in accordance with the subscriber identification indicia, the authentication server returning an authorized subscriber's individual subscriber profile information, the system granting broadband access to the wide area network to the subscriber solely in accordance with the individual subscriber profile information.

8. The system according to claim 7, wherein the system stores individual subscriber profile information in the memory storage area, the system granting a subscriber broadband access in accordance with stored individual subscriber profile information upon second and subsequent connection sessions.

9. The system according to claim 1, wherein the WAN/trunk card further comprises:

a WAN connection portion;

a control portion, the control portion further including;

a control processor; and

out-of-band communication means, the out-of-band communication means bi-directionally communicating with a network management system; and

wherein the control portion is functionally bifurcated from the WAN portion, such that the WAN portion may be implemented in accordance with a multiplicity of communication interface methodologies interchangeably.

10. The system according to claim 9, the WAN portion coupled to the wide area network in accordance with a communication interface methodology selected from the group consisting of T1, T3, 10/100BASE-Tx, 1000BASE-T.

11. In a self-contained data communication system of the type configured for installation in a user premises having multiple subscriber access location ports, a method for providing simultaneous broadband connectivity to said multiple access location ports at DSL rates, the method comprising:

coupling a subscriber data signal line between the system and each of a multiplicity of subscriber ports of a user premises;

providing a plurality of line cards within a housing, each line card further including a DSL modem bank;

aggregating said subscriber data lines into the plurality of line cards through high density connectors;

detecting a request for service on particular ones of the subscriber data lines; and

concentrating said subscriber data line service requests by servicing said subscriber data lines with a number of modems less than the number of subscriber data lines.

12. The method according to claim 11, further comprising:

providing detector circuitry coupled between the modem bank and the multiplicity of subscriber signal lines;

polling the signal lines with the detector circuitry to thereby detect a request for data service; and

providing a control processor, the processor assigning a particular one of the DSL modems comprising the modem bank to a subscriber upon detection of a request for data service on a particular subscriber signal line.

13. The method according to claim 12, further comprising:

providing a WAN communication interface card, disposed within the housing and coupled to the plurality of line cards by a signal bus;

coupling the WAN communication interface card between each modem bank and a wide area network so as to effect bi-directional broadband communication therebetween thereby providing broadband access to the wide area network from any one of the subscriber data signal lines.

14. The method according to claim 13, wherein each line card includes sixteen DSL modems, each line card further configured to couple to 128 subscriber data signal lines, each line card controlling access to particular ones of the modems by all 128 subscriber signal lines.

15. The method according to claim 14, wherein each housing is configured to include four line cards, the system configured to provide simultaneous access by sixty four DSL modems to a wide area network, each housing defined system providing broadband connectivity to 512 subscriber signal lines.

16. The method according to claim 15, wherein each housing includes a daisy-chain coupling such that multiple housings are configured into a scaleable architecture capable of aggregating subscriber data signal lines in multiples of 128 or 512.

17. A method for providing simultaneous broadband connectivity to multiple access locations implemented in a premises remote from a user's home service location, the method comprising:

aggregating a multiplicity of subscriber data lines;

polling the data lines so as to detect a request for data service on particular ones thereof;

servicing multiple simultaneous data service requests through a plurality of DSL modems; and

concentrating multiple DSL communication sessions through a wide area network interface so as to facilitate multiple simultaneous communication sessions between a wide area network and multiple users using broadband access from a premises remote from and unrelated to a user's home location.

18. The method according to claim 17, further comprising:

interrogating a user for an identification indicia upon receipt of a data service request;

establishing an in-band communication channel with a remote record storage facility;

receiving subscriber record information, associated with the user, provided by the remote record storage facility; and

granting access to a broadband connection to the wide area network in accordance with the subscriber record information.

19. The method according to claim 18, wherein the remote record storage facility comprises a plurality of authentication servers, each authentication server disposed within and servicing a particular geographic area, each authentication server receiving individual subscriber profile information from DSL service providers within the geographic region and storing said individual subscriber profile information in a respective database.

20. The method according to claim 19, each subscriber receiving a unique subscriber identification indicia, the subscriber identification indicia including an address identifier portion indicating a subscriber's home authentication server.

21. The method according to claim 20, the system interrogating a subscriber's home authentication server in accordance with the subscriber identification indicia, the authentication server returning an authorized subscriber's individual subscriber profile information, the system granting broadband access to the wide area network to the subscriber solely in accordance with the individual subscriber profile information.

22. The system according to claim 21, further comprising:

storing individual subscriber profile information in a local memory storage area; and

granting a subscriber broadband access in accordance with stored individual subscriber profile information upon second and subsequent connection sessions.

23. A method for authenticating simultaneous broadband connectivity requests by a plurality of users coupled to multiple access locations implemented in a premises remote from a user's home service location, the method comprising:

assigning each subscribing user a unique identification indicia;

associating the identification indicia with the user's subscription profile information;

storing the user's subscription profile information in a database hosted by one of a plurality of authentication server systems, each authentication server disposed within and servicing a particular geographic area, each authentication server receiving individual subscription profile information from DSL service providers within the geographic region;

interrogating a user for their identification indicia upon receipt of a data service request;

establishing a communication channel with the authentication server;

receiving a user's subscription profile information from the authentication server; and

granting access to a broadband connection to a wide area network in accordance with the user's subscription profile information.

24. The method according to claim 23, each subscriber identification indicia including an address identifier portion indicating a subscriber's home authentication server.

25. The method according to claim 24, further comprising:

storing individual subscriber profile information in a local memory storage area; and

granting a subscriber broadband access in accordance with stored individual subscriber profile information upon second and subsequent connection sessions.